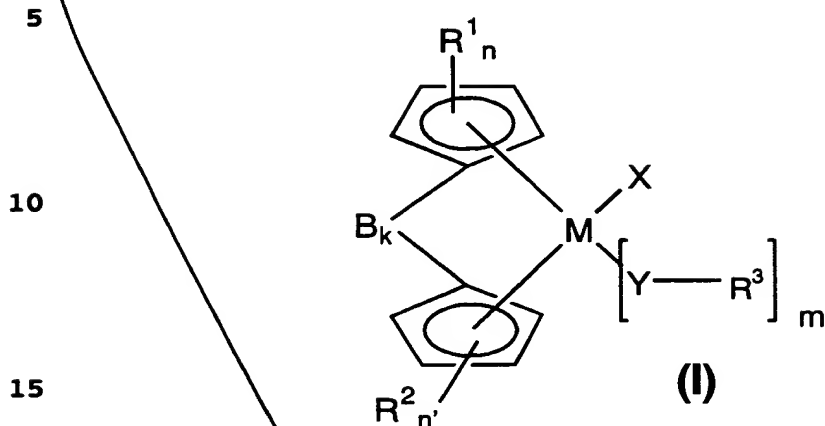


We claim:

1. A compound of the formula (I),



where

20 M is a metal of transition group III, IV, V or VI of the Periodic Table of the Elements,

25 R^1 are identical or different and are each a radical $Si(R^{12})_3$, where R^{12} are identical or different and are each a hydrogen atom or a C_1 - C_{40} -group, or R^1 is a C_1 - C_{30} -group, or two or more radicals R^1 may be connected to one another in such a way that the radicals R^1 and the atoms of the cyclopentadienyl ring which connect them form a C_4 - C_{24} -ring system which may in turn be substituted,

30 R^2 are identical or different and are each a radical $Si(R^{12})_3$, where R^{12} are identical or different and are each a hydrogen atom or a C_1 - C_{40} -group, or R^2 is a C_1 - C_{30} -group, or two or more radicals R^2 may be connected to one another in such a way that the radicals R^2 and the atoms of the cyclopentadienyl ring which connect them form a C_4 - C_{24} -ring system which may in turn be substituted,

35 R^3 are identical or different and are each a C_1 - C_{40} -group,

40 X is a halogen atom,

Y is an element of main group VI of the Periodic Table of the Elements or a fragment CH , CR^3_2 , NR^3 , PR^3 or $P(=O)R^3$,

45 n is from 1 to 5 when $k = 0$, and n is from 0 to 4 when $k = 1$,

- n' is from 1 to 5 when $k = 0$, and n' is from 0 to 4 when $k = 1$,
 m is from 1 to 3, preferably 1,
 5 k is zero or 1, with $k = 0$ giving an unbridged metallocene and $k = 1$ giving a bridged metallocene, and
 B is a bridging structural element between the two cyclopentadienyl rings.
 10 2. A compound as claimed in claim 1, wherein
 M is Ti, Zr or Hf,
 15 R^1 are identical or different and are each a radical $Si(R^{12})_3$, where R^{12} are identical or different and are each a hydrogen atom, C_1 - C_{20} -alkyl, C_1 - C_{10} -fluoroalkyl, C_1 - C_{10} -alkoxy, C_6 - C_{20} -aryl, C_6 - C_{10} -fluoroaryl, C_6 - C_{10} -aryloxy, C_2 - C_{10} -alkenyl, C_7 - C_{40} -arylalkyl, C_7 - C_{40} -alkylaryl or C_8 - C_{40} -arylalkenyl,
 20 or R^1 is C_1 - C_{25} -alkyl, C_2 - C_{25} -alkenyl, C_3 - C_{15} -alkylalkenyl, C_6 - C_{24} -aryl, C_5 - C_{24} -heteroaryl, C_7 - C_{30} -arylalkyl, C_7 - C_{30} -alkylaryl, fluorinated C_1 - C_{25} -alkyl, fluorinated C_6 - C_{24} -aryl, fluorinated C_7 - C_{30} -arylalkyl, fluorinated C_7 - C_{30} -alkylaryl or C_1 - C_{12} -alkoxy, or two or more radicals R^1 may be connected to one another in such a way that the radicals R^1 and the atoms of the cyclopentadienyl ring which connect them form a C_4 - C_{24} -ring system which may in turn be substituted,
 30 R^2 are identical or different and are each a radical $Si(R^{12})_3$, where R^{12} are identical or different and are each a hydrogen atom, C_1 - C_{20} -alkyl, C_1 - C_{10} -fluoroalkyl, C_1 - C_{10} -alkoxy, C_6 - C_{14} -aryl, C_6 - C_{10} -fluoroaryl, C_6 - C_{10} -aryloxy, C_2 - C_{10} -alkenyl, C_7 - C_{40} -arylalkyl, C_7 - C_{40} -alkylaryl or C_8 - C_{40} -arylalkenyl,
 35 or R^2 is C_1 - C_{25} -alkyl, C_2 - C_{25} -alkenyl, C_3 - C_{15} -alkylalkenyl, C_6 - C_{24} -aryl, C_5 - C_{24} -heteroaryl, C_7 - C_{30} -arylalkyl, C_7 - C_{30} -alkylaryl, fluorinated C_1 - C_{25} -alkyl, fluorinated C_6 - C_{24} -aryl, fluorinated C_7 - C_{30} -arylalkyl, fluorinated C_7 - C_{30} -alkylaryl or C_1 - C_{12} -alkoxy, or two or more radicals R^2 may be connected to one another in such a way that the radicals R^2 and the atoms of the cyclopentadienyl ring which connect them form a C_4 - C_{24} -ring system which may in turn be substituted,
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R^3 are identical or different and are each C_1 - C_{25} -alkyl, C_2 - C_{25} -alkenyl, C_3 - C_{15} -alkylalkenyl, C_6 - C_{24} -aryl, C_5 - C_{24} -heteroaryl, C_7 - C_{30} -arylalkyl, C_7 - C_{30} -alkylaryl, fluorinated C_1 - C_{25} -alkyl, fluorinated C_6 - C_{24} -aryl, fluorinated C_7 - C_{30} -arylalkyl or fluorinated C_7 - C_{30} -alkylaryl,

X is chlorine,

Y is oxygen, sulfur or NR^3 ,

n is from 1 to 5 when $k = 0$, and n is from 0 to 4 when $k = 1$,

n' is from 1 to 5 when $k = 0$, and n' is from 0 to 4 when $k = 1$,

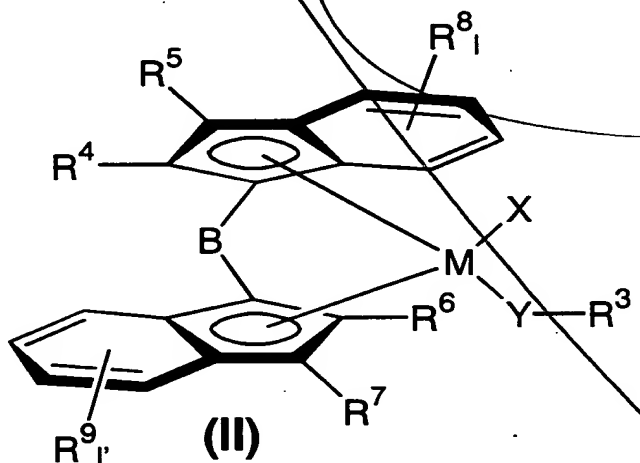
m is 1 and

k is 1.

3. A compound as claimed in claim 1, wherein the formula (I) represents a bridged metallocene compound in which k is 1.

4. A compound as claimed in claim 3, wherein the formula (I) corresponds

to the formula (II)



where

M is Ti, Zr or Hf,

R^3 are identical or different and are each a C_1 - C_{30} -group,

- ~~R⁴, R⁶ are identical or different and are each a hydrogen atom or a C₁-C₂₀-group,~~
- ~~5 R⁵, R⁷ are identical or different and are each a hydrogen atom or a C₁-C₂₀-group,~~
- ~~10 R⁸, R⁹ are identical or different and are each a hydrogen atom, a halogen atom or a C₁-C₂₀-group, and two radicals R⁸ or R⁹ may form a monocyclic or polycyclic ring system which may in turn be substituted,~~
- ~~X is a halogen atom,~~
- ~~15 Y is an element of main group VI of the Periodic Table of the Elements or a fragment CH, CR₃², NR³, PR³ or P(=O)R³,~~
- ~~20 1, 1' are identical or different and are each an integer from zero to 4,~~
- ~~20 B is a bridging structural element between the two indenyl radicals.~~
- ~~5. A compound as claimed in claim 5 [sic], wherein, in the formula (II),~~
- ~~25 M is zirconium,~~
- ~~30 R³ are identical or different and are each C₃-C₁₀-alkyl, C₆-C₂₄-aryl, C₅-C₂₄-heteroaryl, C₇-C₃₀-arylalkyl, C₇-C₃₀-alkylaryl, fluorinated C₆-C₂₄-aryl, fluorinated C₇-C₃₀-arylalkyl or fluorinated C₇-C₃₀-alkylaryl,~~
- ~~35 R⁴, R⁶ are identical or different and are each a hydrogen atom, C₁-C₁₈-alkyl, C₂-C₁₀-alkenyl, C₃-C₁₅-alkylalkenyl, C₆-C₁₈-aryl, C₅-C₁₈-heteroaryl, C₇-C₂₀-arylalkyl, C₇-C₂₀-alkylaryl, fluorinated C₁-C₁₂-alkyl, fluorinated C₆-C₁₈-aryl, fluorinated C₇-C₂₀-arylalkyl or fluorinated C₇-C₂₀-alkylaryl,~~
- ~~40 R⁵, R⁷ are identical or different and are each a hydrogen atom, C₁-C₁₈-alkyl, C₂-C₁₀-alkenyl, C₃-C₁₅-alkylalkenyl, C₆-C₁₈-aryl, C₅-C₁₈-heteroaryl, C₇-C₂₀-arylalkyl, C₇-C₂₀-alkylaryl, fluorinated C₁-C₁₂-alkyl, fluorinated C₆-C₁₈-aryl, fluorinated C₇-C₂₀-arylalkyl or fluorinated C₇-C₂₀-alkylaryl,~~
- ~~45~~

- 5** R^8, R^9 are identical or different and are each a hydrogen atom, a halogen atom, a linear or branched C_1-C_{18} -alkyl group, C_2-C_{10} -alkenyl, C_3-C_{15} -alkylalkenyl, a C_6-C_{18} -aryl group which may be substituted, C_5-C_{18} -heteroaryl, C_7-C_{20} -arylalkyl, C_7-C_{20} -alkylaryl, fluorinated C_1-C_{12} -alkyl, fluorinated C_6-C_{18} -aryl, fluorinated C_7-C_{20} -arylalkyl or fluorinated C_7-C_{20} -alkylaryl, and two radicals R^8 or R^9 may form a monocyclic or polycyclic ring system which may in turn be substituted,
- 10 X** is chlorine,
- Y** is oxygen, sulfur or NR^3 ,
- 15** $1, 1'$ are identical or different and are each 1 or 2,
- B** is a bridging structural element between the two indenyl radicals.
- 20** 6. A catalyst comprising at least one compound as claimed in claim 1 and a support and, if desired, a cocatalyst.
7. A process for preparing a polyolefin in the presence of a catalyst as claimed in claim 6.
- 25** 8. The use of a catalyst as claimed in claim 6 for olefin polymerization.

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